LISTING OF THE CLAIMS

This listing of claims will replace all prior versions, and listings, of claims in the application:

1-41. (Canceled)

42. (Currently Amended)   A ~~computer implemented~~ method of storing data <u>in a memory, the data being</u> captured from a digital communications network, for processing <u>by a processing unit that accesses the memory and executes computer executable instructions</u>, said captured data comprising a stream of messages having message parameters, said stream of messages comprising messages of a plurality of communications sessions, the method comprising:

inputting data from said stream of messages;

writing, for sequential ones of said stream of messages, sequential sets of parameters into a first FIFO (first-in first out) data structure, at an entry point of said first FIFO data structure;

reading said sequential sets of parameters from an exit point of said first FIFO data structure; and

writing said sequential sets of parameters read from said first FIFO data structure into a second data structure; and

wherein said entry point and said exit point are separated by a first data structure length; and wherein said first data structure length has a predetermined minimum value when a set of parameters of said sequential sets of parameters is read from said exit point, wherein said predetermined minimum value is defined in terms of a plural number of said sets of parameters and/or in terms of a time between writing of one of said sets of parameters into said first data structure at said entry point of said first FIFO data structure and reading of a set of parameters of said sequential sets of parameters from said exit point of said first data structure, said time sufficient to write sets of parameters successively into said first FIFO data structure.

43. (Currently Amended)   The ~~computer-implemented~~ method as claimed in claim 42 wherein said second data structure comprises a FIFO data structure.

44. (Currently Amended)   The ~~computer-implemented~~ method as claimed in claim 42 wherein said length defines a predetermined minimum time between one of said sets of parameters being written into and read from said first FIFO data structure.

45. (Currently Amended)   The ~~computer-implemented~~ method as claimed in claim 44 wherein a message rate of said stream of messages varies, and wherein said first FIFO data structure stores a variable number of said sets of parameters.

46. (Currently Amended)   The ~~computer-implemented~~ method as claimed in claim 42 comprising effectively moving said captured data through a plurality of chained FIFO data structures at least some of which have a respective predetermined minimum length.

47. (Currently Amended)   The ~~computer-implemented~~ method as claimed in claim 42 wherein at least one of said first and second data structures includes a last value data store to store a previous value of one or more of said sets of parameters, the method further including updating said last value data store when one or more said sets of parameters is written into said first FIFO data structure.

48. (Currently Amended)   The ~~computer-implemented~~ method as claimed in claim 47 wherein at least one of said first and second data structures includes a plurality of said last value data stores to store a plurality of most recent previous values of one or more of said sets of parameters for a corresponding plurality of said communications sessions, the method further comprising:

        identifying a communications session to which a set of parameters of the one or more sets of parameters belongs; and

updating a last value data store for said communications session when one or more said sets of parameters is written into said first FIFO data structure.

49. (Currently Amended)   The ~~computer-implemented~~ method as claimed in claim 48 wherein said identifying comprises reading parameter data from said first data structure and writing session identification data into said first data structure, wherein said second data structure includes said plurality of least value data stores, and wherein said updating a last value data store for said communications session includes reading said session identification data to identify a last value data store to update.

50. (Currently Amended)   The ~~computer-implemented~~ method as claimed in claim 49 wherein said first and second data structures each comprise a sequential plurality of storage blocks, each storage block having a plurality of storage elements, one for each of a superset of said sets of parameters comprising a set of all parameters selected for storage.

51. (Currently Amended)   A ~~computer-implemented~~ method of processing data <u>stored in a memory, the data being</u> captured from a digital communications network using first and second processing operations, said <u>first and</u> second processing ~~operation~~ <u>operations</u> being <u>executed by a processing unit that accesses the memory and executes computer executable instructions,</u> <u>wherein the second processing operation is</u> dependent upon a result of said first processing operation, a result of said first processing operating requiring a minimum delay for validation, the ~~computer-implemented~~ method comprising storing said captured data as claimed in claim 42 and in parallel:

reading data from said first data structure, operating on said read data using said first processing operation, and writing a result of said first processing operation to said first data structure; and

reading data from said second data structure, and operating on said read data using said second processing operation.

52. (Currently Amended)   The ~~computer-implemented~~ method as claimed in claim 51 further comprising combining and/or selectively discarding one or more of said sets of parameters between reading from said first FIFO data structure and writing to said second data structure.

53. (Currently Amended)   The ~~computer-implemented~~ method as claimed in claim 52 wherein said digital communications network comprises a digital mobile phone network, and wherein said messages selectively discarded messages comprise measurement messages.

54. (Currently Amended)   A <u>non-transitory</u> computer readable medium storing computer executable instructions for performing the ~~computer-implemented~~ method of claim 51.

55. (Previously Presented)   A system for processing data captured from a digital communications network to provide output data, the system comprising:

a data pipe configured to store said captured data as a time-ordered sequence, said data pipe having at least a first region and a second region, said second region corresponding to earlier times than said first region;

at least one first listener attached to said first region of said data pipe;

at least one second listener attached to said second region of said data pipe; and

wherein said at least one first listener is configured to read input data from said data pipe and to write first listener output data determined from said input data back to said data pipe, wherein at least some of said first listener output data is not valid until after a delay greater than a time sufficient to write data successively into said data pipe;

wherein said at least one second listener is configured to read second listener input data including said first listener output data from said data pipe, and to provide output data determined from said read second listener input data; and

wherein a start of said second region of said data pipe is earlier than a start of said first region of said data pipe by at least said delay.

56. (Previously Presented)   The system as claimed in claim 55,

  wherein said delay corresponds to a time interval;

  wherein a rate of captured data storage into said data pipe is variable; and

  wherein a length of said first region is variable.

57. (Previously Presented)   The system as claimed in claim 55 comprising a plurality of said first listeners.

58. (Previously Presented)   The system as claimed in claim 57,

  wherein said first listener output data from one or more of said first listeners is dependent upon first listener output data from one or more others of said first listeners thereby defining a first listener dependency; and

  wherein said first listeners are configured to operate in accordance with said first listener dependency.

59. (Previously Presented)   The system as claimed in claim 55 wherein said captured data comprises a stream of messages having message parameters and including messages of a plurality of communications sessions, at least some of said messages including session-identifying parameters.

60. (Previously Presented)   The system as claimed in claim 59 wherein said at least one first listener includes a listener to identify a session of the plurality of communications sessions and to write session identity data to said data pipe.

61. (Previously Presented)   The system as claimed in claim 59 further comprising a plurality data buckets associated with at least one of said first and second data pipe regions, each bucket corresponding to a communications session of the plurality of communications sessions and

being configured to store one or more previous values of said message parameters for said session.

62. (Cancelled)

63. (Currently Amended)   A ~~non-transitory~~ computer readable medium storing computer program code for processing data captured from a digital communications network, said captured data comprising a stream of messages, one of said messages including message parameters, said stream of messages comprising messages of a plurality of communications sessions, the code comprising:

receiving message parameter data at an input of a first FIFO module ~~having an input for receiving message parameter data~~ from said stream of messages and said first FIFO module having an output;

coupling an input of a second FIFO module ~~having an input coupled~~ to said output of said first FIFO module ~~output~~; and

wherein said message stream has a variable rate and wherein said first FIFO module is configured to guarantee a time delay between said first FIFO input and said first FIFO output of at least a minimum value greater than a time sufficient to write message parameter data successively into said first FIFO module.

64. (Currently Amended)   The computer program code as claimed in claim 63 further comprising:

coupling a first data processing module ~~coupled~~ to said first FIFO module;

~~to read~~ reading data from said first FIFO module at said first data processing module; and

~~to write~~ writing processed data to said first FIFO module from said first data processing module, and a second data processing module coupled to said second FIFO module to read data from said second FIFO module, wherein said second data processing module is configured to

read said processed data from said first data processing module, and wherein said processed data is only valid after at least said minimum time delay value.

65. (Previously Presented)   The computer program code as claimed in claim 64 wherein said processed data includes session discrimination data.

66. (Previously Presented)   The computer program code as claimed in claim 65 wherein said second FIFO module has a plurality of associated data storage modules corresponding to a plurality of discriminated sessions, and wherein said code is configured to store message parameter data in a selected said data storage module responsive to said session discrimination data.

67. (Currently Amended)   A non-transitory computer readable medium storing computer program code, for processing data captured from a digital communications network, said captured data comprising a stream of messages having message parameters, said stream of messages comprising messages of a plurality of communications sessions, the code comprising:

receiving message parameter data at an input of a first FIFO module having an input for receiving message parameter data from said stream of messages and said first FIFO module having an output;

coupling an input of a second data processing module, in particular a FIFO module, having an input coupled to said first FIFO module output; and

coupling a data culling module coupled between said first FIFO output and said second data processing module input; and

to selectively cull culling data at said data culling module to reduce a rate of data processed by said second data processing module compared with said first FIFO module.

68. (Currently Amended)　　The computer program code as claimed in claim 67 further comprising ~~labeling messages at~~ a message labelling module coupled to said first FIFO module ~~to label messages~~ for culling by said data culling module.

69. (Previously Presented)　　The computer program code as claimed in claim 67 further comprising a session discrimination module, and a plurality of storage modules responsive to said discrimination module each to selectively store message parameters for a communications session of the plurality of communications sessions.

70. (Currently Amended)　　A ~~computer-implemented~~ method of processing data <u>stored in a memory, wherein the processing of the data is executed by a processing unit configured to access the memory and execute computer executable instructions, the data being</u> captured from a digital mobile communications network, the data comprising a stream of messages relating to a plurality of entities of said network, the ~~computer-implemented~~ method comprising:

      identifying and labelling data relating to unwanted messages; and

      subsequently reading said labelling and culling said data relating to unwanted messages.

71. (Currently Amended)　　A <u>non-transitory</u> computer readable medium storing computer executable instructions for performing the ~~computer-implemented~~ method of claim 70.

72. (Currently Amended)　　A ~~computer-implemented~~ method of defining a data storage structure <u>stored in memory</u>, the data storage structure comprising FIFO structures coupled in series, at least one said FIFO structures has a guaranteed minimum length, one or more data processing modules <u>comprising computer executable instructions stored in the memory, the processing modules being executed by a processing unit that accesses the memory and executes computer executable instructions, wherein the one or more data processing modules are</u> ~~being~~ couplable to each of said FIFO structures to receive data from the structure, the ~~computer implemented~~ method comprising:

inputting a required parameter set;

determining a set of data processing modules required to provide said required parameter set, one or more of said modules having a minimum required time for a valid output, others of said modules being dependent upon said valid output; and

positioning said data processing modules on said data storage structure to define a structure in which said at least one FIFO of said FIFO structures with a guaranteed minimum length is defined by a module of said one or more data processing modules with a minimum output validation time, and a subsequent series coupled FIFO is defined by a module of said one or more data processing modules dependent upon said valid output,

wherein said at least one FIFO has said guaranteed minimum length when a parameter set is output from said at least one FIFO to said subsequent series coupled FIFO, said guaranteed minimum length being defined in terms of a plural number of said sets of parameters and/or in terms of a time sufficient to write sets of parameters successively into said at least one FIFO.

73. (Currently Amended)   A non-transitory computer readable medium storing computer executable instructions for performing the computer-implemented method of claim 72.

74. (Currently Amended)   A computer-implemented method of storing data in a memory captured from a digital communications network for processing by a processing unit that accesses the memory and executes computer executable instructions, said captured data comprising a stream of messages having message parameters, said stream of messages comprising messages of a plurality of communications sessions, the computer-implemented method comprising:

inputting a current said message of said stream;

discriminating between communications sessions to associate said current message with a communications session of the plurality of communications sessions to which the current message belongs;

writing a set of parameters from the current message into a FIFO data structure identifying the communications session of the plurality of communications sessions to which the message belongs; and

updating a last value data store associated with the communications session of the plurality of communications sessions with parameters of a previous message of the session in response to said associating said current message with the communications session of the plurality of communications sessions,

wherein a communications session of the plurality of communications session is a thread of messages having at least one network entity in common and said discriminating is performed on the basis of information in said current message for linking the current message into said thread.

75. (Currently Amended)   The ~~computer-implemented~~ method of processing data stored according to claim 74, the method comprising determining, for a communications session of the plurality of communications sessions communications sessions, a current value and a last value of one or more of said parameters, from a current message and said last value data store, and processing said current and last value to provide an output value.

76. (Currently Amended)   The ~~computer-implemented~~ method of processing data as claimed in claim 74 wherein said communications session of the plurality of communications sessions involves an entity of said network, and wherein said output value comprises an estimated state of said entity.

77. (Currently Amended)   A non-transitory computer readable medium storing computer executable instructions for performing the ~~computer-implemented~~ method of claim 74.

78. (Currently Amended)   A non-transitory computer readable medium storing computer program code for storing data captured from a digital communications network for processing,

said captured data comprising a stream of messages having message parameters, said stream of messages comprising messages of a plurality of communications sessions, the code comprising:

> sequentially storing said messages in a buffer module to sequentially store said messages;

> associating said message at a discriminator module to associate said message with a communications session of said plurality of communications sessions; and

> storing, at a bucket module, responsive to said discriminator module to store a most recent previous value for one or more of said message parameters for each of a plurality of said communications sessions in response to said discriminator module,

> wherein said communications session of said plurality of communications sessions is a thread of messages having at least one network entity in common and said discriminating is performed on the basis of information in said message for linking the message into said thread.

79. (Currently Amended)   A computer-implemented method of modeling a plurality of communications sessions or network entities substantially in parallel by a processing unit that accesses a memory and executes computer executable instructions, using data stored in the memory, the data being captured from a digital communications network, said captured data comprising a stream of messages having message parameters, said stream of messages comprising messages of a plurality of communications sessions, a communications session of the plurality of communications sessions comprising a thread of messages communicated by or to a network entity of the plurality of network entities common to said thread messages, the computer implemented method comprising:

> storing, for each said session or entity, a most recent previous value for a parameter set comprising one or more of said parameters;

> determining, for a current message, a communications session or entity to which the message belongs, on the basis of information in said current message for linking the current message into said thread;

> determining one or more current parameter values from said current message;

updating a state model for said communications session or entity to which the message belongs using said one or more current values and said most recent previous parameter set value for said communications session or entity;

updating said most recent previous value parameter set using said one or more current parameter values; and

repeating said determining and updating to model said plurality of communications sessions or network entities using a parallel bank of said state models, one for each said session or entity.

80. (Currently Amended)   The ~~computer-implemented~~ method as claimed in claim 79 wherein said plurality of network entities comprise a plurality of instantiations of a single type of network entity.

81. (Currently Amended)   A <u>non-transitory</u> computer readable medium storing computer executable instructions for performing the ~~computer-implemented~~ method of claim 79.